

REMARKS

Claims 1 to 10 are pending in the Application, with Claims 6 to 10 being withdrawn from consideration. Applicant respectfully requests reconsideration and allowance in view of the further amendment and the following remarks.

As explained in the previous amendment and in accordance with the invention, exfoliation of the layered mineral particles into constituent layers does not need to be as complete as the references of record require. Specifically, claim 1 is amended to define that at least some of the reinforcing particles are not completely exfoliated and are up to about 30 layers thick, to more clearly distinguish the instant invention from the prior art of record. Support for this amendment can be found in the other claim limitations and in the specification as originally filed. The specification as originally filed states that the exfoliation of layered mineral particles into constituent layers does not need to be complete (p. 11, lines 15-21). Further, claim 1 as originally filed recites that at least 99% of the reinforcing particles are less than about 30 layers thick. In other words, at least some of the reinforcing particles are up to about 30 layers thick, since the exfoliation of the layered mineral particles does not need to be complete.

The prior art of record requires that the reinforcing particles are exfoliated and not more than up to about 10 layers thick. It is generally accepted in the prior art that the preparation of nanocomposites requires extensive delamination of the layered clay structure and complete dispersion of the resulting platelets throughout the polymer matrix. Thus, in accordance with the prior art, an exfoliated nanocomposite, wherein the layered mineral swells so much that it is no longer organized into stacks, is the most desirable structure. Therefore, the prior art discloses methods to improve exfoliation to achieve complete or almost complete exfoliation. However, usually very strong electrostatic interactions between silicate layers through intergallery cations make it extremely difficult to achieve complete exfoliation of the layers. Therefore, the prior art

Atty. Docket: 081548/0281188

Client Ref: 38/REG/701554 US

discloses efforts to avoid this difficulty and to achieve complete exfoliation of the particles through the development of a compatibilizer chemistry as a key factor in the expansion of this nanotechnology, for example, by replacing such cations by some quarternized ammonium salts.

In accordance with the instant invention, exfoliation of the layered mineral particles does not need to be as complete as the references of record require. Consistent with this greater tolerance for larger particles, claim 1 is amended to specify that at least some reinforcing particles are up to about 30 layers thick, which is attributable to those particles not being completely exfoliated. None of the references of record teach or suggest particles of that size as being permissible. Furthermore, the prior art does not provide any motivation to provide reinforcing particles in which the exfoliation is not complete. Thus, the present invention provides advantages over the prior art since it reduces the efforts in achieving a complete or nearly complete exfoliation of the layered mineral particles and hence it reduces the time and cost of providing reinforcing particles.

Applicant respectfully requests entry of the present Amendment, and reconsideration and allowance of the Application.

Respectfully submitted,
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